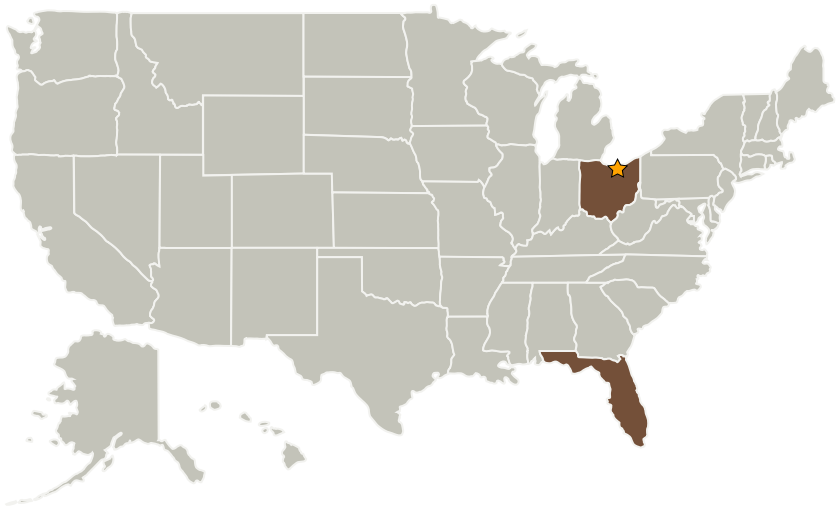
Radiation Tolerant Reconfigurable/Reprogrammable 802.16 Communication System, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

Exploration of planetary surfaces will require a communication architecture that supports operational capabilities in which fixed and mobile assets on the planetary surface can communicate seamlessly and securely. Aeronix understands the issues and believes that the solution lies in the development of radiation tolerant wireless devices that employ the benefits of FPGA technology as an underlying architecture feature. Aeronix is currently developing two technologies that will be directly leveraged. ? A FPGA/DSP based enhanced 802.16-2004 wireless LAN air-to-ground solution targeted for DoD applications with peak throughput of 65.5 Mbps. ? A Radiation Tolerant FPGA based, NSA Crypto Mod compliant cryptographic module for space. The specific problem addressed by this Aeronix Phase I SBIR effort is to identify enhancements to the 802.16-Terrestrial architecture and design required to meet the harsh environmental and radiation conditions expected in space and on planetary exploration missions. The new radiation tolerant communications solution will be identified as 802.16 RadT and will have operational capabilities of 65.5 Mbps / 70 miles. Additionally, this SBIR will address the unique requirements for Information Assurance and Type 1 crypto for classified command, control, and data requirements via integration of radiation tolerant crypto.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Aeronix, Inc.	Supporting Organization	Industry	Melbourne, Florida

Primary U.S. Work Locations	
Florida	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.1 Situational and Self Awareness
    - TX10.1.1 Sensing and Perception for Autonomous Systems